

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing: 11 January 2001 (11.01.01)	
International application No.: PCT/US99/14963	Applicant's or agent's file reference: DN1999069
International filing date: 01 July 1999 (01.07.99)	Priority date:
Applicant: COLANTONIO, Laurent	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
08 November 2000 (08.11.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

RECEIVED

MAR 14 2000

PCT

GOODYEAR PATENT & TRADE MARK DEPT.

From the INTERNATIONAL SEARCHING AUTHORITY

To:

The Goodyear Tire and Rubber Comp.
c/o Robert W. Brown-Dept 823
1144 East Market Street
Akron, Ohio 44309-3531
UNITED STATES OF AMERICA

HMC

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year)

08/03/2000

Applicant's or agent's file reference

DN1999069

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US 99/14963

International filing date
(day/month/year)

01/07/1999

Applicant

THE GOODYEAR TIRE & RUBBER COMPANY et al.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for International publication.

Within 19 months from the priority date, a demand for International preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Sandrine Polenzani

mm

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference DN1999069	FOR FURTHER ACTION		see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US 99/ 14963	International filing date (day/month/year) 01/07/1999	(Earliest) Priority Date (day/month/year)	
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

5

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/14963

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B60C17/00 B60C9/09 B60C9/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B60C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LU 53 950 A (MICHELIN ET CIE) 11 March 1968 (1968-03-11) page 6, line 1 - line 14; claims	1,2,4
X	EP 0 922 593 A (BRIDGESTONE CORP) 16 June 1999 (1999-06-16) claims; figures	1
A		5
Y	EP 0 507 184 A (BRIDGESTONE FIRESTONE INC) 7 October 1992 (1992-10-07) cited in the application page 4, column 6, line 45 -page 5, column 7, line 51; claims; figures 2-4	1-4
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

1 March 2000

Date of mailing of the international search report

08/03/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Baradat, J-L

International Application No
PCT/US 99/14963

International Application No
PCT/US 99/14963

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2 419 179 A (UNIROYAL) 5 October 1979 (1979-10-05) page 2, line 28 - page 3, line 6; claims; figures	1-4
A	US 4 287 924 A (LEFAUCHEUR CLAUDE ET AL) 8 September 1981 (1981-09-08) column 2, line 38 - line 58	1
A	EP 0 157 761 A (LIM KUNSTSTOFF TECH GMBH) 9 October 1985 (1985-10-09) page 3, line 21 - line 26; claims; figure 1	5
A	EP 0 385 192 A (PIRELLI) 5 September 1990 (1990-09-05)	1,5
A	WO 98 54012 A (GOODYEAR TIRE & RUBBER) 3 December 1998 (1998-12-03)	1,5

INTERNATIONAL SEARCH REPORT

Information on patent family members

Application No

PCT/US 99/14963

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
LU 53950	A	11-03-1968	AT 289570 B BE 700024 A CH 456368 A DE 1680428 A DK 121279 B ES 342872 A FR 1502689 A GB 1169438 A IL 28195 A NL 6709010 A NO 121639 B SE 321416 B US 3464477 A	15-02-1971 18-12-1967 04-06-1970 27-09-1971 16-10-1968 07-02-1968 05-11-1969 17-06-1970 29-12-1967 22-03-1971 02-03-1970 02-09-1969
EP 0922593	A	16-06-1999	JP 10053012 A JP 11129712 A WO 9854011 A	24-02-1998 18-05-1999 03-12-1998
EP 0507184	A	07-10-1992	US 5217549 A CA 2064937 A,C DE 69205610 D DE 69205610 T ES 2078572 T JP 5112110 A	08-06-1993 05-10-1992 30-11-1995 11-04-1996 16-12-1995 07-05-1993
FR 2419179	A	05-10-1979	NONE	
US 4287924	A	08-09-1981	FR 2425333 A EP 0005399 A JP 54151201 A	07-12-1979 14-11-1979 28-11-1979
EP 0157761	A	09-10-1985	AT 383995 B AT 383994 B AT 89785 A AU 572055 B AU 4127985 A CA 1231636 A SU 1412599 A US 4708187 A US 4731137 A AT 118184 A DD 237140 A IN 162995 A JP 61001505 A ZA 8502566 A	10-09-1987 10-09-1987 15-02-1987 28-04-1988 10-10-1985 19-01-1988 23-07-1988 24-11-1987 15-03-1988 15-02-1987 02-07-1986 30-07-1988 07-01-1986 27-11-1985
EP 0385192	A	05-09-1990	IT 1228522 B JP 2283508 A	20-06-1991 21-11-1990
WO 9854012	A	03-12-1998	AU 6560698 A AU 6943398 A AU 7124998 A AU 7693298 A WO 9854008 A WO 9854007 A WO 9854014 A	30-12-1998 30-12-1998 30-12-1998 30-12-1998 03-12-1998 03-12-1998 03-12-1998

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

COHN, Howard M
The Goodyear Tire and Rubber Comp.
c/o Robert W. Brown-Dept 823
1144 East Market Street
Akron, Ohio 44309-3531
ETATS-UNIS D'AMERIQUE

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing
(day/month/year) 16.11.2001

Applicant's or agent's file reference
DN1999069

IMPORTANT NOTIFICATION

International application No.
PCT/US99/14963

International filing date (day/month/year)
01/07/1999

Priority date (day/month/year)
01/07/1999

Applicant
THE GOODYEAR TIRE & RUBBER COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

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NOV 27 2001

GOODYEAR PATENT
& TRADEMARK

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
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Authorized officer

BON, L

Tel. +49 89 2399-2961



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 20 NOV 2001

WIPO

Applicant's or agent's file reference DN1999069	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/14963	International filing date (day/month/year) 01/07/1999	Priority date (day/month/year) 01/07/1999
International Patent Classification (IPC) or national classification and IPC B60C17/00		
Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.



☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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MAR 11 2002
TC 1700

Date of submission of the demand 08/11/2000	Date of completion of this report 16.11.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Kieslinger, J Telephone No. +49 89 2399 8871 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/14963

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-3,5-22	as originally filed			
4,4a	as received on	08/10/2001	with letter of	26/09/2001

Claims, No.:

1-6	as received on	08/10/2001	with letter of	26/09/2001
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Drawings, sheets:

1/5-5/5	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/14963

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-6
	No:	Claims	1
Inventive step (IS)	Yes:	Claims	
	No:	Claims	2-6
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

REF. ITEM V

V.1. Prior art

Reference is made to the following documents:

- D1: WO 98 54012 A (GOODYEAR TIRE & RUBBER) 3 December 1998
- D2: EP-A-0 385 192 (PIRELLI) 5 September 1990 (1990-09-05)
- D3: EP-A-0 475 258 (PIRELLI) cited in the application
- D4: EP-A-0 922 593 (BRIDGESTONE CORP) 16 June 1999 (1999-06-16)
- D5: LU 53 950 A (MICHELIN ET CIE) 11 March 1968 (1968-03-11)
- D6: EP-A-0 157 761
- D7: US-A-4 193 437 (not cited in the international search report. A copy is appended hereto)

V.2. Independent claim 1

Document D1 (see in particular figure 5 and the corresponding text on page 22, line 19 to page 23, line 4) which is considered to represent the most relevant state of the art, discloses

"A pneumatic radial ply runflat tire (10) having a tread (12), two inextensible annular beads (22), a carcass structure (30) comprising a metal reinforced first or inner carcass ply (38), a second or outer carcass ply (32) and an inner liner (35), a belt structure (36) located between the tread and the carcass structure, and two sidewall regions (20) each being reinforced by at least one wedge insert (42,46), the metal reinforced first carcass ply (38) being sandwiched between two circumferentially disposed **fabric layers** (comprising **cords 41** or fibres 82 made of **textile**), said layers comprising parallel-aligned cords (e.g. at 45°) having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions."

It is noted in passing that "sidewall" means nothing else than that portion of a tire between the tread and the bead (see the applicant's own definition on page 9). That means that a sidewall of a tire is not defined by **radial** dimensions. Therefore also the corresponding layer (with cords 41) of D1 is disposed **within** the respective sidewall regions.

Therefore the subject-matter of claim 1 lacks novelty (Article 33(2) PCT).

V.3. Independent claim 4

The solution proposed in claim 4 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

D1 shows and describes

"A pneumatic radial ply runflat tire (10) having a tread (12), a carcass structure (30) comprising a metal-reinforced first carcass ply (38), a second carcass ply (32), two inextensible annular beads (22) and an inner liner (35), a belt structure (36) located between the tread and the carcass structure, and two sidewall regions (20) each being reinforced by a wedge insert (42,46), a **fabric layer** (comprising cords 41 or fibres 82 made of **textile**) circumferentially disposed axially inward of the metal reinforced first carcass ply (160), said layer having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions."

The subject-matter of claim 4 differs from that of D1 in that the fabric layer is a **woven layer**.

The subject-matter of claim 4 appears therefore to be novel (Article 33(2) PCT).

The problem to be solved by the present invention may therefore be regarded as to seek an alternative to the structure of the known reinforcement layers of D1 providing the same or similar effects.

The solution proposed in claim 4 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

It is generally known to the person skilled in the art that a **woven** fabric (see e.g. D2 with a "textile reinforcement element 10", or D3 with a "textile reinforcement strip 17", or D6 with "knit fabrics 6") is an equivalent to the textile cord layers, i.e. fabric layers of document D1 and can be interchanged with that feature where circumstances make it desirable.

V.4. Dependent claims

Dependent claims 2, 3, 5 and 6 do not appear to contain features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step. These claims suggest only slight constructional changes in the device of claim 1 or 4, which - with regard to D1 to D7 - comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of the dependent claims also lacks an inventive step.

V.5. Industrial Applicability

Claims 1 to 6 seem to fulfil the provisions of Art. 33 (4) PCT, because corresponding tires can be produced and used at least in the vehicle industry.

REF. ITEM VII

Although claims 1 and 4 are drafted in the two-part form some of the features (see under ITEM V.2. and V.3. above) are incorrectly placed in the characterising portion, as they are disclosed in document D1 in combination with the features placed in the preamble (Rule 6.3(b) PCT).

several drawbacks. The two most important ones are increased tire weight and heat buildup in the wedge inserts, especially at high speed and during runflat operation.

During runflat operation, especially at high speed, the heat buildup in the wedge inserts leads to deterioration and disintegrative failure of the tire. Among the methods used to manage heat buildup due to cyclical flexure of the wedge inserts are the use of low-hysteresis rubber compounds in the fabrication of the wedge inserts as well as ways to conduct the heat away from the wedge inserts, as described in EP-A-729,853 incorporated in its entirety by reference herein. Another method by which to minimize heat buildup is to decrease the magnitude of the flexural strain by adding additional rubber to the sidewall-reinforcing wedge inserts or by incorporating additional strengthening structures such as the a metal reinforced first ply, which is able to carry, with minimal deformation, a large portion of the compressive part of each sidewall's deflected load. An example of a metal-reinforced first ply is disclosed in Patent Application Serial No. PCT/US98/13929, having a common assignee with the present invention. The metal-reinforced first ply carries a large portion of the compressive load on the axially inwardmost side of each wedge insert while also serving to redistribute heat and conduct it away from the insert. Accordingly, a runflat tire incorporating such a metal-reinforced first ply contributes to a longer runflat service life and to improved runflat handling, especially at high speeds.

Another example of a metal-reinforced first ply is disclosed in an international patent application published as International Publication Number WO 98/54012, and having a common assignee with the present invention. Referring to their Figures 4 and 5, an alternative embodiment is described wherein inserts (80) and fillers (46) may be cord reinforced (41) and positioned such that the radially outer ends are terminated under the belt structure while the radially inner ends terminate above, adjacent to the bead cores (26) or are wrapped around the bead cores. Further

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alternatively, the inserts (42,46) may be loaded with sort fibers (82) to enhance the radial and lateral stiffness of the insert.

OBJECTS OF THE INVENTION

5 It is an object of the present invention to provide a light-weight, two-ply runflat radial passenger tire, being as defined in one or more of the appended claims and, as such, having the capability of being constructed to accomplish one or more of the following subsidiary objects.

10 An object of the present invention is to provide a two-ply runflat radial passenger tire, having good tire life and vehicle handling characteristics and a satisfactory ride

What is claimed:

1. A pneumatic radial ply runflat tire (100) having a tread (102), two inextensible annular beads (124a,124b), a carcass structure (118) comprising a metal reinforced first or inner carcass ply (120), a second or outer carcass ply (122) and an inner liner (124), a belt structure (104) located between the tread and the carcass structure, and two sidewall regions (112,114) each being reinforced by at least one wedge insert (128a,128b), the tire being characterized by:
- the metal reinforced first carcass ply (120) being sandwiched between two circumferentially disposed fabric layers (130a,130b,132a,132b);
- said layers comprising parallel-aligned cords having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions (112,114).
2. The tire (100) of claim 1 characterized in that the respective parallel-aligned cords of each of the two circumferentially disposed fabric layers (130a,130b,132a,132b) in the respective sidewall regions (112,114) are oriented at opposite angles of between 20 degrees and 50 degrees to each other in the circumferential direction.
3. The tire (100) of claim 1 characterized in that the two circumferentially disposed fabric layers (130a,130b,132a,132b) in the respective sidewall regions (112,114) have radial width of between 20 percent and 80 percent of the maximum radial reach of the respective wedge inserts (128a,128b).
4. A radial ply runflat tire (140) having a tread (142), a carcass structure (156) comprising a metal reinforced first carcass ply (160), a second carcass ply (162), two inextensible annular beads (159a,159b) and an inner liner (164), a belt structure (144) located between

the tread and the carcass structure, and two sidewall regions (152,154) each being reinforced by a wedge insert (168a,168b), the tire characterized by:

5 a woven fabric layer (170a,170b) circumferentially disposed axially inward of the metal reinforced first carcass ply (160);

said layer having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions.

10 5. The tire (140) of claim 4 characterized in that the circumferentially disposed woven fabric layer (170a,170b) in the respective sidewall regions (112,114) have radial width of between 20 percent and 80 percent of the maximum radial reach of the respective wedge inserts (168a,168b).

15 6. The tire (140) of claim 4 characterized in that woven threads of the fabric cross each other at an angle of between 20 and 50 degrees with respect to the cords of the first carcass ply (160).

What is claimed:

7. A pneumatic radial ply runflat tire having a tread, two inextensible annular beads, a carcass structure comprising a metal reinforced first or inner carcass ply, a second or outer carcass ply and an inner liner, a belt structure located between the tread and the carcass structure, and two sidewall regions each being reinforced by at least one wedge insert, the tire being characterized by:

10 the metal reinforced first carcass ply being sandwiched between two circumferentially disposed fabric layers;

said layers comprising parallel-aligned cords having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions.

15 8. The tire of claim 7 characterized in that the respective parallel-aligned cords of each of the two circumferentially disposed fabric layers in the respective sidewall regions are oriented at opposite angles of between 20 degrees and 50 degrees to each other in the circumferential direction.

20 9. The tire of claim 7 characterized in that the two circumferentially disposed fabric layers in the respective sidewall regions have radial width of between 20 percent and 80 percent of the maximum radial reach of the respective wedge inserts.

25 10. A radial ply runflat tire having a tread, a carcass structure comprising a metal reinforced first carcass ply, a second carcass ply, two inextensible annular beads and an inner liner, a belt structure located between the tread and the carcass structure, and two sidewall regions each being reinforced by a wedge insert, the tire characterized by:

a woven fabric layer circumferentially disposed axially inward of the metal reinforced first carcass ply;

30 said layer having both radially inwardmost and radially outwardmost portions disposed within the respective sidewall regions.

11. The tire of claim 10 characterized in that the

circumferentially disposed woven fabric layer in the respective sidewall regions have radial width of between 20 percent and 80 percent of the maximum radial reach of the respective wedge inserts.

- 5 12. The tire of claim 10 characterized in that woven threads of the fabric cross each other at an angle of between 20 and 50 degrees with respect to the cords of the first carcass ply.